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clearly that the embryo is formed by concrescence. At first the embryo increases in length largely by the formation of new somites, but after about one hundred myotomes appear, growth seems to be more in the increase in size of the somites. Especially noticeable are the large blood sinuses which develop around the embryo. No sections are described in the paper.

The Primitive Pulmonate Kidney. — Meisenheimer points out (*Zeits. wiss. Zool.*, Vol. LXV, 1899) that the apparently distinct types of primitive kidney found in Stylommatophora and Basommatophora can be reduced to a simple tube, closed at its inner end by a differentiated ciliated cell. In the process of differentiation the tube of the Basommatophora retains constantly four cells, while in the Stylommatophora the number is greatly increased. In the Basommatophora one cell becomes greatly enlarged, and in this the process of excretion is concentrated, while no such giant cell is developed in the other group, but excretion is performed by many cells. It is difficult to homologize this system with that found in other molluscs. Meisenheimer points out the similarities of this system to the conditions occurring in the Plathelmenthes, and cites this as an additional proof of the origin of the molluscs from the flat worms.

Life History of the Dicyemids. — As a result of studies of Californian dicyemids, Wheeler concludes (*Zool. Anz.*, Bd. XXII, p. 169, 1899) that the same Dicyema is first nematogen and later rhombogen, and that the so-called infusoriform embryo is, as van Beneden suggested, the male dicyemid. From the relations of the infusorigens and the life history of the animals Wheeler concludes that the male dicyemids arise from fertilized eggs, while the females are produced parthenogenetically. Wheeler points out that this interpretation throws little light upon the systematic position of these forms, since their reproduction is very different from the flat worms. He thinks, therefore, that they should not be an Anhang to the Plathelminthes, while he also thinks they are not worthy of being erected into a subkingdom Mesozoa.

Origin of the Cartilages of the Head. — Lundborg has studied embryos of trout, frog, siredon, and acanthias, and comes to the conclusion (*Morph. Jahrbuch*, Bd. XXVII, p. 242, 1899) that the chondrocranium is of ectodermal origin. He calls attention to the fact that all of the cartilages of the head arise upon the ventral

surface and only later extend to the dorsal side, and would explain this condition by the fact that all of the dorsal ectoderm has been utilized in the formation of nervous tissue. In the same journal (pp. 208 ff.) Dr. H. K. Corning comes to directly the opposite conclusions. His observations were made upon the embryos of the frog, and he bases his opinions upon the negative appearances of the forms studied, and also upon a critical analysis of Miss Platt's papers.

Zoölogical Notes.—In the journal of the Queckett Microscopical Club Mr. D. J. Scourfield has described the winter egg of *Leydigia acanthocercoides*. The proto-ephippium of this rare lynceid is the most highly organized of any yet found in the group and approaches that of the Daphnidæ. The author is engaged upon a study of the epiphia of the Cladocera and desires material for investigation.

The Copepoda of Lincoln, Neb., have been enumerated by Mr. A. D. Brewer in the last number of the journal of the Cincinnati Society of Natural History.

Regeneration in Crustacea has been studied comparatively in many groups by Przibram (*Arb. Zool. Inst.*, Wien, Bd. XI). The author calls attention to the extraordinary resemblance of the regeneration phenomena in organisms to the regeneration of crystals.

Miss Rathbun (*N. A. Fauna*, No. 14) enumerates four species of decapod crustacea from Tres Marias Islands, off the west coast of Mexico.

Miss Harriet Richardson has just published a key to the isopod crustacea of the Pacific coast of the United States (*Proc. U. S. Nat. Mus.*, Vol. XXI, pp. 815-869, 1899). Ninety-seven species are enumerated, including the terrestrial forms.

North-American entomology has had no keener observer or more careful and conscientious recorder than the late Henry G. Hubbard. Since his death Mr. E. A. Schwarz has printed two series of Mr. Hubbard's most interesting letters; one, in *Entomological News* for April, describes the home of *Dinapate wrightii*; and a second, in *Psyche* for May, gives an account of the insect fauna of the giant cactus of Arizona.

No. 4 of Vol. XXV of the *Transactions of the American Entomological Society* concludes with Fox's study of the North-American Mutillidæ. The high character maintained by this society in all of its publications is well illustrated in this most admirable paper.